BRADFORD WHITE®
WATER HEATERS

Pump-Mounted Water Heaters

B4 - Copper Brute Water Heaters

Indoor/Outdoor Sizes 175,000 - 1,825,000 BTU/Hr.

Up to 82% Thermal Efficiency

The unit will be designed and constructed in accordance with the ASME Boiler and Pressure Vessel Code Section IV requirements for 160 psi working pressure. The units will bear the ASME "H" stamp and be registered by the National Board.

5-Year Limited Heat Exchanger Warranty / 1-Year Limited Warranty on Component Parts.

For more information on warranty, please visit www.bradfordwhite.com

For products installed in USA, Canada and Puerto Rico. Some states do not allow limitations on warranties. See complete copy of the warranty included with the heater.

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,954,492; 5,761,379; 5,943,984; 5,081,696; 5,988,117; 6,142,216; 5,199,385; 5,574,822; 5,372,185; 5,485,879; 5,277,171; (B1)5,341,770; 5,660,165; 5,596,952; 5,682,666; 4,904,428; 5,023,031; 5,000,893; 4,669,448; 4,829,983; 4,808,356; 5,115,767; 5,092,519; 5,052,346; 4,416,222; 4,628,184; 4,861,968; 4,672,919; Re. 34,534; 7,270,087 B2. OTHER U.S. AND FOREIGN PATENT APPLICATIONS PENDING. CURRENT CANADIAN PATENTS: 1,272,914; 1,280,043; 1,289,832; 2,045,862; 2,112,515; 2,108,186; 2,107,012; 2,092,105; 2,409,271.
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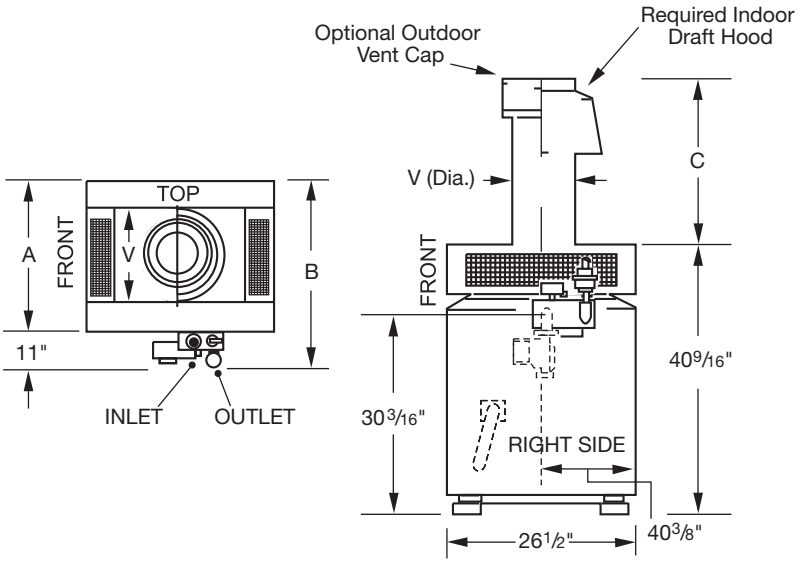
Copper-Brute (175-400)
Water Heater Dimensions

Illustrated dimensions are shown in inches.



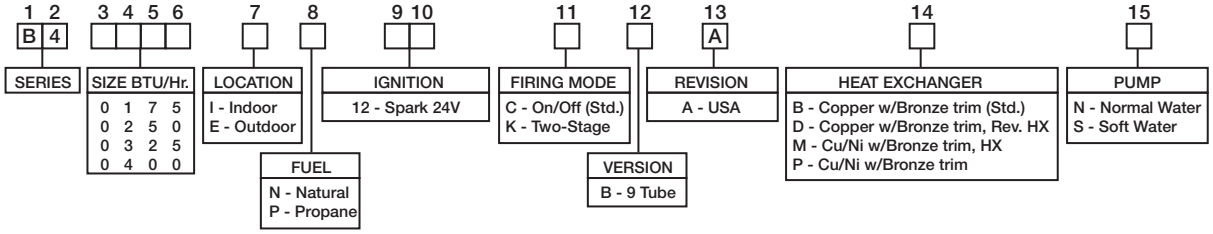
Copper-Brute™ Convertible Models

NATURAL GAS AND LIQUID PROPANE GAS

Indoor Model Number	A in.	B in.	C in.	V in.
B40175IN	18	26 1/2	23 1/2	6
B40250IN	22 1/2	31	24 3/4	7
B40325IN	26 3/4	35 1/4	25 7/8	8
B40400IN	31 3/4	40 1/4	26 7/8	9
Outdoor Model Number	**A in.**	**B in.**	**C in.**	**V in.**
B40175EN	18	26 1/2	23 1/2	6
B40250EN	22 1/2	31	24 3/4	7
B40325EN	26 3/4	35 1/4	25 7/8	8
B40400EN	31 3/4	40 1/4	26 7/8	9
Indoor Model Number	**A mm.**	**B mm.**	**C mm.**	**V mm.**
B40175IN	457	673	597	152
B40250IN	572	787	629	178
B40325IN	680	895	657	203
B40400IN	807	1022	683	229
Outdoor Model Number	**A mm.**	**B mm.**	**C mm.**	**V mm.**
B40175EN	457	673	597	152
B40250EN	572	787	629	178
B40325EN	678	8905	657	203
B40400EN	807	1022	683	229

Dimensions are nominal.

Copper-Brute (175-400)
Water Heater Specifications



Copper-Brute™ Convertible Models

NATURAL GAS AND LIQUID PROPANE GAS

Indoor[1] Model Number	Natural/LP Input BTU/Hr.	Indoor Output[2] BTU/Hr.	Temperature Rise Across Heater Gallons Per Hour Delivered 100°F	140°F	Gas Connection Size Natural in.	Propane in.	Water Conn. in.	Approx. Shipping Weight lbs.
B40175IN	175,000	142,000	170	122	3/4	1/2	1 1/2	275
B40250IN	250,000	204,000	245	175	3/4	1/2	1 1/2	305
B40325IN	325,000	263,000	316	226	3/4	1/2	1 1/2	345
B40400IN	399,000	324,000	389	278	3/4	1/2	1 1/2	380

Outdoor Model Number	Natural/LP Input BTU/Hr.	Outdoor Output[2] BTU/Hr.	Temperature Rise Across Heater Gallons Per Hour Delivered 100°F	140°F	Gas Connection Size Natural in.	Propane in.	Water Conn. in.	Approx. Shipping Weight lbs.
B40175EN	175,000	140,000	168	120	3/4	1/2	1 1/2	275
B40250EN	250,000	200,000	240	171	3/4	1/2	1 1/2	305
B40325EN	325,000	260,000	312	223	3/4	1/2	1 1/2	345
B40400EN	399,000	320,000	384	274	3/4	1/2	1 1/2	380

Indoor[1] Model Number	Natural/LP Input kW/Hr.	Indoor Output[2] kW/Hr.	Temperature Rise Across Heater Liters Per Hour Delivered 38°C	60°C	Gas Connection Size Natural mm.	Propane mm.	Water Conn. mm.	Approx. Shipping Weight kg.
B40175IN	51	42	170	122	19	13	38	125
B40250IN	73	60	245	175	19	13	38	138
B40325IN	95	77	316	226	19	13	38	156
B40400IN	117	95	389	278	19	13	38	172

Outdoor Model Number	Natural/LP Input kW/Hr.	Outdoor Output[2] kW/Hr.	Temperature Rise Across Heater Liters Per Hour Delivered 38°C	60°C	Gas Connection Size Natural mm.	Propane mm.	Water Conn. mm.	Approx. Shipping Weight kg.
B40175EN	51	41	168	120	19	13	38	125
B40250EN	73	59	240	171	19	13	38	138
B40325EN	95	76	312	223	19	13	38	156
B40400EN	117	94	384	274	19	13	38	172

Standard pumps provided based on water hardness. Hardness must be known before ordering. “Soft” water contains up to 7.5 grains per gallon. “Normal” water measures 7.6 through 17 grains per gallon; and “Hard” water measures over 17 grains per gallon.

FOR INDOOR MODELS
For LP Models, change suffix “N” to “P”. Indoor configuration includes the separate drafthood. All units feature: System 1 Standing Pilot; Pump Delay; All Bronze Pump; Flow Switch (mounted and wired); and Remote Aquastat (E-144)

FOR OUTDOOR MODELS
For LP Models, change suffix “N” to “P”. Above models include: Standing Pilot Ignition; Flow Switch (mounted and wired); All Bronze Pump and Fittings; and Remote Aquastat (E-144). Pump supplied for units 175 to 1825 sized for normal water (7-17 Grain Hardness). For hard or soft water pumps please consult factory.

Notes: 1. Indoor drafthood required for all indoor applications.
B40175 needs p/n R0318702
B40250 needs p/n R0318713
B40325 needs p/n R0318704
B40400 needs p/n R0318705

2. Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude.
3. All dimensions are nominal.

Copper-Brute II (500-1825)
Water Heater Dimensions

Illustrated dimensions are shown in inches.

Copper-Brute™ Energy Saver Models

NATURAL GAS AND LIQUID PROPANE GAS

Indoor Model Number	A in.	B in.	C in.	V in.
B40500IN	39 5/8	39 5/8	23 5/8	10
B40600IN	38 1/2	44 5/8	22 5/8	12
B40715IN	44 1/4	50 1/4	22 5/8	12
B40850IN	50 5/8	56 5/8	21 5/8	14
B41010IN	58	64	20 5/8	16
B41200IN	66 1/4	72 1/4	20 5/8	16
B41430IN	76	82	19 5/8	18
B41670IN	85 3/8	91 3/8	19 5/8	18
B41825IN	92 1/4	98 1/4	19 5/8	18

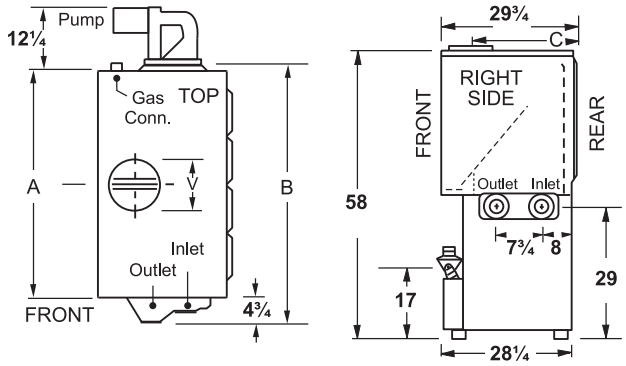
Outdoor Model Number	A in.	B in.
B40500EN	33 3/4	39 3/4
B40600EN	38 3/4	44 3/4
B40715EN	44 1/4	50 1/4
B40850EN	50 3/4	56 3/4
B41010EN	58	64
B41200EN	66 1/4	72 1/4
B41430EN	76	82
B41670EN	85 1/2	91 1/2
B41825EN	92 1/4	98 1/4

Indoor Model Number	A mm.	B mm.	C mm.	V mm.
B40500IN	1007	1007	600	254
B40600IN	978	1134	575	305
B40715IN	1124	1276	575	305
B40850IN	1286	1438	551	356
B41010IN	1473	1626	525	406
B41200IN	1683	1835	525	406
B41430IN	1930	2083	499	457
B41670IN	2169	2321	499	457
B41825IN	2343	2496	499	457

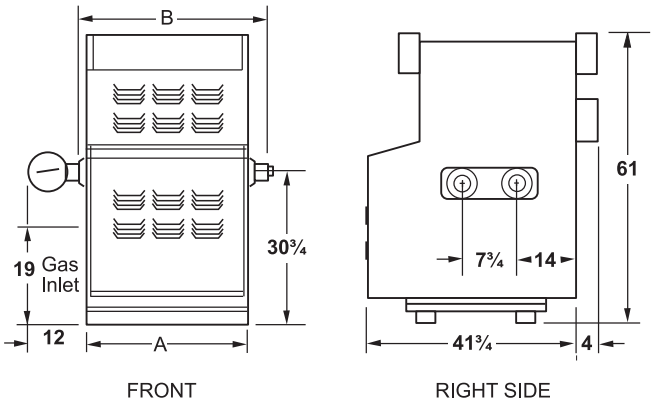
Outdoor Model Number	A mm.	B mm.
B40500EN	857	1010
B40600EN	984	1137
B40715EN	1124	1276
B40850EN	1289	1442
B41010EN	1473	1626
B41200EN	1683	1835
B41430EN	1931	2083
B41670EN	2172	2324
B41825EN	2343	2496

All dimensions are nominal.

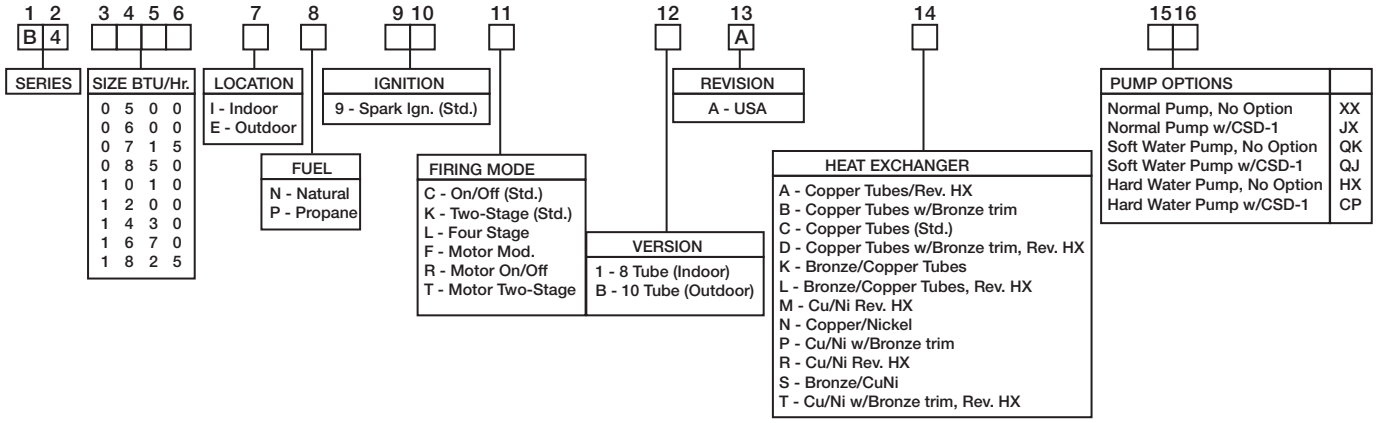
Indoor Models



Outdoor Models



Copper-Brute II (500-1825) Water Heater Specifications


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
B 4
SERIES
SIZE BTU/Hr.
0 5 0 0
0 6 0 0
0 7 1 5
0 8 5 0
1 0 1 0
1 2 0 0
1 4 3 0
1 6 7 0
1 8 2 5
LOCATION
I - Indoor
E - Outdoor
FUEL
N - Natural
P - Propane
IGNITION
9 - Spark Ign. (Std.)
FIRING MODE
C - On/Off (Std.)
K - Two-Stage (Std.)
L - Four Stage
F - Motor Mod.
R - Motor On/Off
T - Motor Two-Stage
VERSION
1 - 8 Tube (Indoor)
B - 10 Tube (Outdoor)
A
REVISION
A - USA
HEAT EXCHANGER
A - Copper Tubes/Rev. HX
B - Copper Tubes w/Bronze trim
C - Copper Tubes (Std.)
D - Copper Tubes w/Bronze trim, Rev. HX
K - Bronze/Copper Tubes
L - Bronze/Copper Tubes, Rev. HX
M - Cu/Ni Rev. HX
N - Copper/Nickel
P - Cu/Ni w/Bronze trim
R - Cu/Ni Rev. HX
S - Bronze/CuNi
T - Cu/Ni w/Bronze trim, Rev. HX
PUMP OPTIONS
Normal Pump, No Option XX
Normal Pump w/CSD-1 JX
Soft Water Pump, No Option QK
Soft Water Pump w/CSD-1 QJ
Hard Water Pump, No Option HX
Hard Water Pump w/CSD-1 CP

Copper-Brute™ Energy Saver Models

NATURAL GAS AND LIQUID PROPANE GAS

Indoor Model Number	Natural/LP Input[1] BTU/Hr.	Indoor Output[2] BTU/Hr.	Temperature Rise Across Heater Gallons Per Hour Delivered 90°F	100°F	140°F	Gas Connection Size[2,3] Natural in.		Propane in.		Water Conn. in.	Approx. Shipping Weight lbs.
B40500IN	500,000	405,000	540	486	347	1	—	3/4	1	2	745
B40600IN	600,000	486,000	648	583	417	1	—	3/4	1	2	835
B40715IN	715,000	579,000	772	695	496	1	—	3/4	1	2	905
B40850IN	850,000	689,000	918	826	590	1	1 1/2	3/4	1 3/4	2	955
B41010IN	1,010,000	818,000	1091	982	701	1 1/4	—	1	1 1/4	2 1/2	1075
B41200IN	1,200,000	972,000	1296	1166	833	1 1/4	—	1	1 1/4	2 1/2	1200
B41430IN	1,430,000	1,158,000	1544	1390	993	1 1/4	—	1 1/4	—	2 1/2	1345
B41670IN	1,670,000	1,353,000	1804	1623	1159	1 1/4	1 1/2	1 1/4	—	2 1/2	1430
B41825IN	1,825,000	1,478,000	1971	1774	1267	1 1/4	1 1/2	1 1/4	—	2 1/2	1480

Outdoor Model Number	Natural/LP Input[1] BTU/Hr.	Indoor Output[2] BTU/Hr.	Temperature Rise Across Heater Gallons Per Hour Delivered 90°F	100°F	140°F	Gas Connection Size[2,3] Natural in.		Propane in.		Water Conn. in.	Approx. Shipping Weight lbs.
B40500EN	500,000	405,000	540	486	347	1	—	3/4	1	2	745
B40600EN	600,000	486,000	648	583	417	1	—	3/4	1	2	835
B40715EN	715,000	579,000	772	695	496	1	—	3/4	1	2	905
B40850EN	850,000	689,000	918	826	590	1	1 1/2	3/4	1 3/4	2	955
B41010EN	1,010,000	818,000	1091	982	701	1 1/4	—	1	1 1/4	2 1/2	1075
B41200EN	1,200,000	972,000	1296	1166	833	1 1/4	—	1	1 1/4	2 1/2	1200
B41430EN	1,430,000	1,158,000	1544	1390	993	1 1/4	—	1 1/4	—	2 1/2	1345
B41670EN	1,670,000	1,353,000	1804	1623	1159	1 1/4	1 1/2	1 1/4	—	2 1/2	1430
B41825EN	1,825,000	1,478,000	1971	1774	1267	1 1/4	1 1/2	1 1/4	—	2 1/2	1480

Indoor Model Number	Natural/LP Input[1] BTU/Hr.	Indoor Output[2] kW/Hr.	Temperature Rise Across Heater Liters Per Hour Delivered 32°C	38°C	60°C	Gas Connection Size[2,3] Natural mm.		Propane mm.		Water Conn. mm.	Approx. Shipping Weight kg.
B40500IN	147	119	2044	1840	1314	25	—	19	25	51	338
B40600IN	176	142	2453	2207	1578	25	—	19	25	51	379
B40715IN	210	170	2922	2631	1878	25	—	19	25	51	411
B40850IN	249	202	3475	3127	2233	25	38	19	45	51	433
B41010IN	296	240	4129	3717	2654	32	—	25	32	64	488
B41200IN	352	285	4906	4414	3153	32	—	25	32	64	544
B41430IN	419	339	5845	5262	3759	32	—	32	—	64	610
B41670IN	489	397	6829	6144	4387	32	38	32	—	64	649
B41825IN	535	433	7461	6715	4796	32	38	32	—	64	671

Standard pumps provided based on water hardness. Hardness must be known before ordering. “Soft” water contains up to 7.5 grains per gallon. “Normal” water measures 7.6 through 17 grains per gallon; and “Hard” water measures over 17 grains per gallon.

FOR INDOOR MODELS & OUTDOOR MODELS
For propane models, change “N” to “P”. Outdoor units include Outdoor Vent Terminal and Outdoor Combustion Terminal.
Above models include: Hot Surface Ignition; Flow Switch (mounted and wired); All Bronze Fitted Pump; Pump Delay and Remote Sensor.
Pump supplied are sized for normal water (7-17 Grain Hardness). For hard or soft water pumps please consult factory.
No drafthood required on size 500-1825 outdoor units.

Notes: 1. Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude.
2. When two gas connections are shown, the smaller applies to the standard gas train, while the larger applies to optional trains such as four stage or motorized gas valves.
3. All dimensions are nominal.

Standard Features

- Thermal efficiency up to 85%
- ASME 160 psi working pressure heat exchanger
- ASME "H" stamp, designed and certified for potable water use
- Flanged bronze water connections
- Glass-lined headers
- External header gaskets
- 125 psi (861 kPa) ASME rated pressure relief valve
- Flow switch, mounted and wired
- Temperature/pressure gauge
- Pump, mounted and wired
- Multiple operating gas valve/pressure regulators
- Manual "A" gas valve
- Washable intake air filter
- Multiple, removable burner trays
- Stainless steel burners
- Built-in draft fan for Category I or III vent systems
- Air pressure switch
- Burner site glass
- 24V control system
- 115/24VAC transformer
- Ignitor access panels
- Energy Management Monitor (EM^2) pump time delay
- Manual reset high limit
- Automatic reset high limit (500-2000 only)
- Electronic PID staging control with LCD and touchpad
- PC board for electrical connections
- External controller connections with selector switch
- Hot surface ignition
- On/Off toggle switch
- Pump time delay
- Diagnostic lights
- Less than 10 ppm NOx (500-2000 only)
- Less than 30 ppm NOx (200-400 only)
- All models can be converted to either indoor use or outdoor use. For outdoor use, you must order exhaust vent and air intake vent (consult factory for part numbers)

Optional Equipment

- Copper-nickel heat exchanger
- Normally open vent valve (500-2000 only, see IRI Package)
- Low water cutoff
- Motorized gas safety valve (500-2000, see LDS Package)
- Double stack stand (500-2000 only)
- Reverse Heat Exchanger - switches the inlet and outlet to left side and pump to the right side
- Indoor Venting Accessories (required for sidewall venting)
- CSD-1 Package includes:
  Size 500-2000:
  Single Try Ignition, High and Low Gas Pressure Switches, and Gas Regulator.
  Excludes Low Water Cutoff.
- IRI Package, added to the CSD-1 package includes:
  Size 500-2000:
  Single Try Ignition, High and Low Gas Pressure Switches with Manual reset, Normally Open Vent Valve, Safety Valve with Gas Regulator and Leak Test Valve.
  Excludes Low Water Cutoff
- LDS Package includes:
  Size 500-1000:
  Safety Valve with Gas Regulator, High Gas Pressure Switch and Leak Test Valve.
  Size 1250-2000:
  Solenoid Safety Valve, Motorized Valve with Proof of Closure, Leak Test Valve, High and Low Gas Pressure Switches.

Clearances

APPLIANCE SURFACE	REQUIRED CLEARANCE FROM COMBUSTIBLE MATERIAL		SUGGESTED SERVICE ACCESS CLEARANCES	
	inch	cm	inch	cm
Left Side	1	2.5	24	61
Right Side	1	2.5	24	61
Top	1	2.5	12	30
Back*	1	2.5	12	30
Front	1	2.5	36	91
Vent	Per venting supplier's instructions			

*When vent and/or air is connected to the back, 36" (91cm) is suggested.

Motor Electrical Data

WATER CATEGORY						
	Power (HP)			Current (Amps)		
Model Numbers	Soft	Normal	Hard	Soft	Normal	Hard
BWCV0200	1/3	1/3	3/4	2.8	2.8	7.2
BWCV0300	1/3	1/3	3/4	2.8	2.8	7.2
BWCV0400	1/3	1/3	3/4	2.8	2.8	7.2
BWCV0500	1/3	1/3	3/4	2.8	2.8	7.2
BWCV0750	1/3	1/3	3/4	2.8	2.8	7.2
BWCV1000	1/3	1/2	3/4	2.8	5.2	7.2
BWCV1250	1/3	1/2	3/4	2.8	5.2	7.2
BWCV1500	1/3	3/4	3/4	2.8	7.2	7.2
BWCV1750	3/4	3/4	3/4	7.2	7.2	7.2
BWCV2000	1	1	1	9.8	9.8	9.8

BRADFORD WHITE®
WATER HEATERS
Ambler, PA
For U.S. and Canada field service, contact your professional installer or local Bradford White sales representative.
Sales **800-523-2931** • Fax **215-641-1670** / Technical Support **800-334-3393** • Fax **269-795-1089** • Warranty **800-531-2111** • Fax **269-795-1089**
International: Telephone **215-641-9400** • Telefax **215-641-9750 / www.bradfordwhite.com**
BRADFORD WHITE-CANADA® INC. Sales / Technical Support **866-690-0961** / **905-238-0100** • Fax **905-238-0105** / **www.bradfordwhite.com**

Built to be the Best™

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